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ABSTRACT

Hunt and O'Donnell's Aluminum Paragraph was administered to sixty Canadian college students enrolled in English as a Second Language (ESL) courses. The students were asked to re-write and to improve a paragraph consisting of 32 short, single-clause sentences. The students were identified as low intermediate, high intermediate, and advanced in level of language ability, according to Michigan Test and composition scores. They represented a wide variety of first-language backgrounds, including such languages as Spanish, Chinese, French, Greek, Arabic, Persian, Urdu, Armenian, Dutch, and others. The subjects' re-written paragraphs were evaluated according to words per clause: clauses, words, and coordinate clauses per T-unit: error-free T-units: words per error-free T-unit: relative clauses: preposed adjectives: preposition phrases: and passives. Error-free T-units and words per error-free T-unit seemed to be most productive in separating the three proficiency levels. (The Aluminum Paragraph and sample paragraphs representing the three proficiency levels are appended). (GDC)

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Syntactic Maturity: Assessing Writing Proficiency in a Second Language*

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ABSTRACT

The traditional composition and admissions test have provided indirect measures of writing proficiency in ESL. A more direct measure may be obtained through the use of a rewrite instrument - the Aluminum Paragraph, and the T-unit measure that have been used successfully in L_1 and L_2 studies of growth in syntactic complexity.[1] The effectiveness of T-units are determined in measuring writing proficiency at the intermediate and advanced levels of adult ESL. Error-free T-units and words per error-free T-unit seem to be the most productive variables in separating proficiency levels.

This paper will report on an attempt to use an exercise and measure developed by researchers in English as a first language (O'Donnell, Griffin and Norris, 1967; Hunt, 1970; Stewart, 1978) to measure syntactic maturity, with learners of English as a second language preparing for university-level work in Canada.

The exploratory research to be reported attempts to determine the usefulness of a rewrite/sentence-combining exercise in measuring the second language learner's ability to control English syntax in written production, an ability traditionally measured by the written composition.

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Proficiency in writing is a major academic requirement for the second language learner who intends to undertake university coursework in North America. Teachers of ESL, preparing such students, feel the need for some direct measure of their students' ability to produce syntactically mature prose. Existing language tests, with their emphasis on objectivity and reliability, have encouraged the use of indirect measurement of productive skills. The written composition has been one such indirect measurement that has been criticized as unreliable and invalid. Different evaluators seem to produce different evaluations depending on the priority assigned to various criteria employed to measure written production of the free-writing type.

The written composition measures a whole range of linguistic and other skills and the syntactic structures used are only one feature among many that determine the quality of the writing. A composition that is syntactically immature, i.e. where sentence complexity is less than what is desired by the particular type of writing, may be adequate or superior in other respects. Use of syntactically complex structures, moreover, cannot be the sole criterion for judging a composition favorably. Furthermore, if the learning environment overemphasizes correctness in the use of syntactic structures, the composition may be a poor indication of the competence of the student who avoids using complex sentences for fear of producing incorrect structures.

Facilitating control over written structures to a degree approximating native speakers is the objective of the grammar and composition teacher. To evaluate this facilitation, indirect measures such as the TOEFL

and Michigan tests are used, measures which have, at best, only concurrent validity. Furthermore, recognition of correct syntax is not synonymous with correct production of syntax, and a test that requires the examinee to judge written structures for correctness, says nothing about the examinee's ability to produce these structures correctly. An instrument that directly measures the learner's ability to control the syntactic structures in attempting to produce mature writing, would be of more value to the ESL teacher interested in facilitating the development of his/her students.

The instrument used in this study is the "Aluminum Paragraph" (Appendix A) developed by O'Donnell and used by Hunt to investigate the development of syntactic maturity in the writing of English-speaking schoolchildren and adults. The paragraph consists of 32 short, single-clause sentences of connected discourse. Subjects are asked to rewrite the passage in a better way by combining sentences, changing the order of words, and omitting words that are repeated too often. No information is to be left out.

A great advantage of this rewrite exercise is that, unlike the usual free-writing exercise, there is control for topic and content. As Hunt (p. 10) suggests, by "removing those variations in syntactic structure which might be due to differences in what two writers or groups of writers are saying, those other differences which are due only to the writer's syntactic maturity may be more clearly visible and measurable."

The combining of the short sentences serve to give the writer ample opportunity to use many of the sentence-combining/embedding transformations

whose increased use has been shown by researchers in L_1 (Hunt, 1965, 1970; O'Donnell et al, 1967; Loban, 1976; Stewart, 1978) and L_2 (Monroe, 1974, for French; Gaies, 1976, for ESL) to be characteristic of developing proficiency. We are thus interested in seeing whether our writers increase their use of sentence-combining transformations with greater proficiency in English.

The rewrite exercise was given to 60 students enrolled in ESL classes in the Winter Session, 1978, at Concordia University. Michigan Test and composition scores had been used to place 20 of these students at the "low intermediate" level (ESL 100(3):Michigan 81-85), 20 at the "high intermediate level (ESL 100(5):Michigan 91-95), and 20 at the "advanced" level (ESL 201:Michigan 96+). Subjects came from a variety of L_1 backgrounds: Arabic (5), Armenian (1), Chinese (9), Dutch (1), Finnish (1), French (8), German (1), Greek (6), Hindi (1), Hungarian (1), Ibo (1), Malay (1), Persian (3), Punjabi (1), Serbo-Croatian (1), Somali (1), Spanish (14), Urdu (2), Vietnamese (1), Yoruba (1).

The performance of the subjects at the three levels is summarized in Appendix B and compared to Gaies' subjects at comparable levels. The variables used to measure performance were 1) words per clause, 2) clauses per T-unit, 3) words per T-unit, 4) coordinate clauses per T-unit, 5) error-free T-units, and 6) words per error-free T-unit. Four grammatical structures that were used by a half or more of the subjects at each level were also measured as performance variables: 1) relative clauses, 2) preposed adjectives, 3) preposition phrases, and 4) passives. A T-unit, as defined by Hunt (1970, p. 4) is "one main clause plus any subordinate clause or

nonclausal structure that is attached to or embedded in it." An error-free T-unit, found by Scott and Tucker (1974), Larsen-Freeman and Strom (1977), and Sharma (1979) to be a useful measure of L_2 growth, is being defined in this study as a T-unit that is correct in every respect, i.e. which has no errors of morphology, syntax, lexicon, style, capitalization, punctuation, or spelling. Both the T-unit and the error-free T-unit have come to be recognized by L_1 and L_2 researchers as easily-computable, objective measures of syntactic complexity and far more valid than traditional measures such as sentence length.

To illustrate the increasing ability to use sentence-combining transformations with increasing proficiency of our students, we have taken the first seven simple sentences of the Aluminum paragraph and shown how a writer at each of the three levels (in each case, a Spanish speaker) has succeeded in combining more of the sentences into fewer and fewer T-units of increasing length (Appendix A). The low intermediate student has used three T-units (in parentheses) to combine information from the first six sentences of the original paragraph. The high intermediate student has also used three T-units, but has managed to combine the first three sentences into one T-unit, whereas the low intermediate student managed to combine only two original sentences into his first T-unit. Furthermore, the high intermediate student has used the more mature process of reducing a relative clause and moving the remaining adjective to the front of the noun ("abundant metal"), thus allowing room for another relative clause, all in the same T-unit. The low intermediate student has had to include "abundant" in a much less sophisticated way -- through the use of a coordinate clause, and in a

separate T-unit at that. The advanced student has managed to exploit all possible processes to form his first T-unit: preposed adjective from a reduced relative clause, a relative clause, and a coordinate. All four of the original sentences have been combined into one T-unit and he has needed only one more T-unit to combine the remaining sentences of the original paragraph. The decrease in the use of T-units to combine the same amount of information, moreover, has been accompanied by a corresponding increase in the word length of these T-units. The processes used are, obviously, not the only way to combine the original sentences, but what is revealing here is that the learner's ability to produce syntactically mature prose seems at least partially to depend on his/her ability to exploit the embedding processes available in the target language.

The results show our low intermediate students performing like Gaies' "nonnative speakers of English enrolled in intensive language improvement classes" (p. 5) on measures of words/clause and clauses/T-unit and better on words/T-unit. Gaies' "highly proficient nonnative speakers enrolled in graduate work" performed higher than our advanced students on all of the above measures, but this is easily explained by the fact that our students were just beginning their instruction in advanced ESL. Both Gaies' and our subjects showed interesting linear increases with increasing level of proficiency.

Comparing the performance of our students with Hunt's L_1 and Monroe's L_2 norms (Appendix C), we have our intermediates performing at the level of L_1 Grade 8-9 and L_2 junior-senior norms, and our advanced students performing at the level of L_1 Grade 10-11 and L_2 graduate norms. Measures on the use

of coordinate clauses/T-unit did not turn out to be too productive, for instead of a decreasing reliance on this combining process we have a steadily increasing use of this structure with proficiency level. Error-free T-units and words/error-free T-unit were very productive as measures of growth, since with the exception of a slight decrease of error-free T-units on the part of the high intermediates, we see steady increases on both measures with increasing level of proficiency. T-tests of significance conducted on the group means for these measures showed significant differences in performance between the low intermediates and the advanced students (error-free T-units: $t = 2.22$, 0.05 level of confidence; words/per error-free T-unit: $t = 4.97$, 0.01 level of confidence). Equally interesting was the performance on the use of the four grammatical structures. Relatives were dominated by which subject NP clauses at all levels, and there were almost no occurrences of object of preposition relatives. What is interesting is that as use of relatives decreased with increasing proficiency, there was a corresponding increase of preposed adjectives and preposition phrases -- signs of increasing reduction of subordinate clauses with increasing proficiency, a phenomena already observed in L_1 studies.

Our results seem to be revealing enough to encourage us to pursue further research in the use of the T-unit measure with a larger number of subjects and larger samples of writing. Our next project at Concordia will involve the use of free-writing samples written by this year's incoming students, as part of the ESL admissions test. We will attempt to examine the writing done on a common topic, since research in both L_1 (San Jose, 1972; Perron, 1977; Crowhurst, 1977) and L_2 (Sharma, 1979) indicates that syntactic

complexity is affected by the mode of the writing task. An effort will be made to choose the writing that is done on the topic that affords the most syntactic complexity, e.g. an argumentative or persuasive topic. We will look at the performance of intermediate and advanced level students, particularly through the error-free T-unit and words/error-free T-unit measures, and we will test for significant differences in performance. We will also look at the structures favored/avoided by particular language groups. Finally, we will attempt to look for correlations between performance on our measures and scores on tests used for placing these students at appropriate proficiency levels.

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APPENDIX A

THE ALUMINUM PARAGRAPH (Hunt,1970,pp.11-12) (ED 113735)

DIRECTIONS: Read the passage below all the way through. You will notice that the sentences are short and choppy. Study the passage, and then rewrite it in a better way. You may combine sentences, change the order of words, and omit words that are repeated too many times. But try not to leave out any information.

Aluminum is a metal. It is abundant. It has many uses It comes from bauxite. Bauxite is an ore. Bauxite looks like clay. Bauxite contains aluminum. It contains several other substances. Workmen extract these other substances from bauxite. They grind the bauxite. They put it in tanks. Pressure is in the tanks. The other substances form a mass. They remove the mass. They use filters. A liquid remains. They put it through several other processes. It finally yields a chemical. The chemical is powdery. It is white. The chemical is alumina. It is a mixture. It contains aluminum. It contains oxygen. They use electricity. They finally produce a metal. The metal is light. It has a luster. The luster is bright. The luster is silvery. The metal comes in many forms.

ESL 100(3): LOW INTERMEDIATE:

(Aluminum is a metal that has many uses)(and it is abundant.)(It comes from bauxite which is an ore and looks like clay.)

ESL 100(5): HIGH INTERMEDIATE:

(Aluminum is an abundant metal that has many uses.)(It comes from bauxite,)(it is an ore and looks like clay.)

ESL 201: ADVANCED:

(Aluminum is an abundant metal which comes from bauxite and has many uses.)(Bauxite is an ore that looks like clay and contains aluminum.)

APPENDIX B

GROUP MEAN PERFORMANCE IN ESL

VARIABLE	Gaies(1976) (N=20)	LOW INTER (N=20)	HIGH INTER (N=20)	Gaies (N=5)	ADVANCED (N=20)
Words/clause	6.25 (s=.999)	6.44 (s=1.87)	6.97 (s=1.26)	8.52	7.48 (s=1.78)
Clauses/T-unit	1.27 (s=.213)	1.33 (s=.41)	1.39 (s=.22)	1.66	1.45 (s=.35)
Words/T-unit	7.96 (s=2.22)	9.31 (s=2.27)	9.86 (s=1.97)	14.12	10.26 (s=2.28)
$Coord_{cl}$/T-unit		.37 (s=.16)	.52 (s=.18)		.43 (s=.02)
Error-free TU		6.15 (s=4.28)	5.3 (s=3.56)		8.95 (s=3.69)
Words/EFTU		6.06 (s=2.41)	8.41 (s=3.24)		9.49 (s=1.91)
Relative Cl.		4.30 (s=2.27)	4.10 (s=2.85)		3.85 (s=1.56)
Preposed Adj.		2.55 (s=2.58)	2.95 (s=2.21)		3.85 (s=2.41)
Preposition Ph.		.80 (s=1.06)	.90 (s=.79)		1.25 (s=1.52)
Passives		1.05 (s=1.32)	1.56 (s=2.01)		2.00 (s=2.29)

APPENDIX C

L_1 (English) norms: Hunt (1970) mean scores

VARIABLE	GRADE 4	G 6	G 8	G 10	G 12	Ave. Ad	Skill Ad
Words/clause	5.19	5.76	6.79	7.35	7.85	8.40	9.95
Clauses/T-unit	1.04	1.18	1.43	1.42	1.44	1.47	1.51
Words/T-unit	5.42	6.84	9.84	10.44	11.30	11.85	14.78

Ave. Ad. = average adults

Skill Ad. = skilled adults

L_2 (French): Monroe (1975) mean scores

VARIABLE	FRESHMAN	SOPHOMORE	JUNIOR & SENIOR	GRAD	NATIVE
Words/clause	5.64	5.79	6.21	7.28	7.94
Clauses/T-unit	1.20	1.45	1.51	1.51	1.64
Words/T-unit	6.78	8.42	9.38	10.98	13.23